WHAT IS CLAIMED IS:

1. A mutant SPE-A toxin or fragment thereof, wherein the mutant has at least one amino acid change and is substantially nonlethal compared with a protein substantially corresponding to a wild type SPE-A toxin.

2. A mutant SPE-A toxin according to claim 1, wherein the mutant also has a decrease in mitogenicity for T-cells.

3. A mutant SPE-A toxin according to claim 1, wherein the mutant also does not substantially enhance endotoxin shock.

4. A mutant SPE-A toxin according to claim 1, that has an amino acid substitution for an amino acid equivalent to amino acid 20 asparagine of the wild type SPE-A toxin.

5. A mutant SPE-A toxin according to claim 1 selected from the group consisting of:

a) a mutant SPE-A toxin having an amino acid substitution at an amino acid equivalent to an amino acid 157 lysine of the wild type SPE-A toxin;

b) a mutant SPE-A toxin wherein the mutant has at least one amino acid change in the amino acids equivalent to amino acids of central alpha helix amino acids 142-158 of the wild type SPE-A toxin;

c) a mutant SPE-A toxin wherein the mutant lacks a cysteine at an amino acid equivalent to amino acid 98 of wild type SPE-A toxin;

d) a mutant SPE-A toxin wherein the mutant has at least one amino acid change in amino acids equivalent to

N-terminal alpha helix amino acids 18 to 26 of wild type SPE-A toxin;

e) a mutant SPE-A toxin wherein the mutant has at least one amino acid change in amino acids selected from the group consisting of those amino acids equivalent to B strand 1 amino acids 30-36, B strand 2 amino acids 44-52, B strand 3 amino acids 55-62, B strand 4 amino acids 75-83, and B strand 5 amino acids 95-106;

f) a mutant SPE-A toxin wherein the mutant has at least one amino acid change in amino acids selected from the group consisting of those amino acids equivalent to B strand 6 amino acids 117-126, B strand 7 amino acids 129-135, B strand 8 amino acids 169-175, B strand 9 amino acids 180-186, and B strand 10 amino acids 213-220;

g) a mutant SPE-A toxin that is nonlethal but retains mitogenicity comparable to that of the wild type SPE-A toxin;

h) a mutant SPE-A toxin wherein the amino acid equivalent to amino acid 157 lysine is changed to a glutamic acid;

i) a mutant SPE-A toxin, wherein the amino acid equivalent to amino acid 20 asparagine is changed to an aspartic acid;

j) a mutant SPE-A toxin, wherein the mutant is a multiple mutant N20D/K157E or N20D/C98S;

k) a mutant SPE-A toxin, wherein the mutant is a multiple mutant that includes at least a mutation at amino acid 20 asparagine; and

l) a mutant SPE-A toxin, wherein the mutant has at least an amino acid substitution at an amino acid equivalent to an amino acid 20 asparagine, at an amino acid equivalent to an amino acid 98 cysteine and an amino acid

equivalent to an amino acid 45 aspartic acid of the wild type SPE-A toxin.

6. A vaccine for protecting animals against at least one biological activity of a protein that substantially corresponds to a wild type SPE-A toxin comprising: an effective amount of at least one mutant SPE-A toxin or fragment thereof, according to Claim 1, and stimulates a protective immune response against the at least one biological activity of the wild type SPE-A toxin, when compared with the wild type SPE-A toxin.

7. A vaccine according to claim 6, wherein the mutant or fragment thereof also has a decrease in T cell mitogenicity when compared to wild type SPE-A toxin at the same dose.

8. A vaccine according to claim 6, wherein the mutant SPE-A toxin or fragment thereof has an aspartic acid substituted at an amino acid equivalent to amino acid 20 asparagine of the wild type SPE-A toxin.

9. A vaccine according to claim 6, wherein the mutant SPE-A toxin or fragment thereof also does not substantially potentiate endotoxin shock.

10. A vaccine according to claim 7, wherein the mutant SPE toxin or fragment thereof is not biologically active compared with the wild type SPE-A toxin.

11. A vaccine according to claim 7, wherein an effective amount of mutant SPE-A toxin or fragment thereof is that

amount which stimulates a neutralizing antibody response to the wild type SPE-A toxin.

12. A vaccine according to claim 11, wherein an effective amount is about 0.1ug to 1 mg/ kg body weight.

13. A vaccine according to claim 12, wherein a mutant SPE-A toxin fragment has a change at an amino acid residue equivalent to a residue in the N-terminal alpha helix amino acids 18-26 in the wild type SPE-A toxin.

14. A vaccine according to Claim 11, wherein the mutant SPE-A toxin fragment has a change at an amino acid 20 asparagine.

15. A pharmaceutical composition comprising: A mutant SPE-A toxin or fragment thereof according to claim 1 in admixture with a physiological acceptable carrier.

16. A pharmaceutical composition according to claim 15, wherein the mutant SPE-A toxin or fragment thereof is nonlethal but has mitogenicity for T-cells comparable to the wild type SPE-A toxin.

17. A pharmaceutical composition according to claim 15, wherein the mutant SPE-A toxin or fragment thereof has a change in an amino acid equivalent to amino acid 157 lysine of the wild type SPE-A toxin.

18. An expression cassette comprising: a DNA sequence encoding a mutant SPE-A toxin or fragment thereof according

to claim 1 operably linked to a promoter functional in a host cell.

19. A DNA sequence encoding a mutant SPE-A toxin according to claim 1.

20. A stably transformed host cell comprising an expression cassette according to claim 19.

21. A stably transformed host cell according to claim 20 having an ATCC number 69831.

22. A method for protecting an animal against at least one biological activity of a wild type SPE-A comprising administering a vaccine according to claim 6 to a animal.

23. A method for treating cancer comprising administering a pharmaceutical composition according to claim 15 to a human having cancer.

24. A method of treating an animal with streptococcal toxic shock syndrome comprising administering a wild type SPE-A toxin neutralizing antibody to an animal exhibiting the symptoms of streptococcal toxic shock syndrome, wherein the antibody immunoreacts with the mutant SPE-A toxin or fragment thereof and the wild type SPE-A toxin.

25. A primer for preparing a mutant DNA sequence that encodes a mutant SPE-A toxin and/or fragment thereof that has at least one amino acid change and is substantially nontoxic compared with a protein that substantially corresponds to a wild type SPE-A toxin.

26. A vaccine composition according to claim 6, wherein the mutant SPE toxin or fragment thereof is a multiple mutant N20D/K157E or N20D/C98S.

27. A vaccine composition according to claim 6, further comprising a physiological acceptable carrier.

28. A vaccine composition according to claim 6, further comprising an adjuvant.

29. A vaccine composition according to claim 6, further comprising an immunomodulatory agent.

30. A stably transformed host cell according to claim 20, wherein the host cell is selected from the group consisting of mammalian cells, bacterial cells, yeast cells, and insect cells.

31. A vector comprising an expression cassette according to claim 18.

32. A vector according to claim 30, wherein the vector is a viral vector.

33. A transformed host cell according to claim 27 wherein the host cell is a microorganism.

34. A vaccine composition for protecting an animal against at least one biological activity of a protein substantially corresponding to a wild type SPE-A toxin, comprising: a stably transformed microorganism according to claim 32 in

an amount effective to stimulate a protective immune response against at least one biological activity of the wild type SPE toxin.

35. A vaccine composition for protecting an animal against at least one biological activity of a protein substantially corresponding to a wild type SPE-A toxin, comprising: an effective amount of a viral vector according to claim 32, wherein the viral vector can replicate in the animal.

36. A vaccine composition for protecting an animal against at least one biological activity of a protein substantially corresponding to a wild type SPE-A toxin, comprising; a nucleic acid that encodes a mutant SPE-A toxin or fragment thereof according to claim 1 operably linked to a promoter functional in a host cell.

37. A vaccine composition according to claim 36, further comprising a vector.

38. A vaccine composition according to claim 36, further comprising a delivery agent.

39. A vaccine composition according to claim 38, wherein the delivery agent is a liposome.